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# SPRINGFIELD, OHIO
# AIR POLLUTANT EMISSION INVENTORY

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16. Abstracts

An emission inventory of the Springfield, Ohio SMSA is presented. The Springfield SMSA is made up of only one county, Clark County, which borders the Dayton SMSA. Clark County's 1967 population was 137,700. The results of the inventory are presented on a grid reference system and in tables. For each of the pollutants (sulfur oxides, particles, carbon monoxide, hydrocarbons, and nitrogen oxides), a summary of the 1967 emissions is tabulated for each of these source categories: transportation (road vehicle, evaporation); combustion of fuels in stationary sources (industry, steam-electric, residential, commercial); refuse disposal (incineration, open burning); and industrial process.

17. Key Words and Document Analysis. 17a. Descriptors

Air pollution
Exhaust emissions
Inventories
Sulfur oxides
Nitrogen oxides
Hydrocarbons
Carbon monoxide
Particles
Urban areas
Seasonal variations
Transporation
Ground vehicles
Evaporation
Fuels
Industrial wastes
Steam electric power generation
Residential buildings
Commerce
Solid waste disposal
Incinerators
Combustion
Mapping

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group 13B

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# SPRINGFIELD, OHIO AIR POLLUTANT EMISSION INVENTORY

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PUBLIC HEALTH SERVICE
Consumer Protection and Environmental Health Service
National Air Pollution Control Administration
Air Quality and Emission Data Division
Durham, North Carolina
August, 1969

## SPRINGFIELD EMISSION INVENTORY

An emission inventory of the Springfield, Ohio SMSA was conducted in July to help in the designation of the Air Quality Control Region in central Ohio.

The Springfield SMSA is made up of only county, Clark County, which borders the Dayton SMSA. The 1960 population of Clark County was 131,440, while the 1967 population had increased 5% to 137,700. Springfield is the largest city in Clark County. About 65% of the people in Clark County live in Springfield and almost all the industry is located there.

Working in coordination with the Ohio Department of Health, information was gathered on many of the air pollutant sources in the county. In addition to the industrial process information, data was also collected for fuel useage and refuse disposal from the State of Ohio.

The Metropolitan Planning Agency in Springfield, Ohio was able to supply good data on both the population and the motor vehicle activity in the Study Area.

The results of the inventory are presented on a grid reference system (Figure) extended from the grid system used in the Dayton SMSA Emission Inventory.

The following tables represent the results of the Springfield Emission Inventory.

SUMMARY OF EMISSIONS IN THE SPRINGFIELD STUDY AREA 1967

(TONS/YEAR)

| | $SO_x$ | PART. | CO | HC | $NO_x$ |
|---|---|---|---|---|---|
| Transportation | | | | | |
| Road Vehicle | 130 | 160 | 34,700 | 2,630 | 1,790 |
| Evaporation | | | | 2,530 | |
| Combustion of Fuels in Stationary Sources | | | | | |
| Industry | -- | 10 | -- | -- | 160 |
| Steam-Electric | 2,470 | 7,160 | 260 | 70 | 900 |
| Residential | 1,380 | 2,470 | 2,500 | 550 | 920 |
| Commercial | -- | 10 | -- | -- | 110 |
| Refuse Disposal | | | | | |
| Incineration | 20 | 100 | 440 | 10 | 30 |
| Open Burning | -- | 160 | 850 | 50 | 10 |
| Industrial Process | | 540 | | | |
| TOTAL EMISSIONS | 4,000 | 10,610 | 38,850 | 5,840 | 3,920 |

## FUEL CONSUMPTION IN SPRINGFIELD STUDY AREA

| | Coal (Tons) | Residual Fuel Oil (1000 gal.) | Distillate Fuel Oil (1000 gal.) | Natural Gas ($10^6$ cu. ft.) |
|---|---|---|---|---|
| Industrial | Neg. | Neg. | Neg. | 1,460 |
| Steam-Electric | 104,000 | -- | -- | -- |
| Residential | 10,200 | -- | 7,100 | 4,770 |
| Commercial | 9,700 | -- | Neg. | 1,070 |

| Jurisdiction | Tons Generated | Incineration Municipal | Incineration On-Site | Landfills | Dumps | On-Site Burning |
|---|---|---|---|---|---|---|
| Clark County | 130,000 | -- | 20,000 | 40,000 | 50,000 | 20,000 |

POINT SOURCES FOR SPRINGFIELD AIR POLLUTANT EMISSION INVENTORY (TO

| | Hor. Coor. (100m) | Vert. Coor. (100m) | $SO_x$ SUM | $SO_x$ WIN | $SO_x$ AVG | PART. SUM | PART. WIN | PART. AVG | CO SUM | CO WIN | CO AVG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Industry | 7735 | 44250 | | | | 0.13 | 0.13 | 0.13 | | | |
| Industry | 7740 | 44275 | | | | 0.16 | 0.16 | 0.16 | | | |
| Power Plant | 7685 | 44250 | 6.43 | 6.43 | 6.43 | 13.87 | 13.87 | 13.87 | 0.60 | 0.60 | 0.60 |
| Power Plant | 7720 | 44260 | 0.00 | 0.71 | 0.35 | 0.00 | 11.48 | 5.74 | 0.00 | .22 | .11 |
| Institution | 7715 | 44265 | .52 | .52 | .52 | .22 | .22 | .22 | 0.00 | 0.00 | 0.00 |
| Institution | 7755 | 44255 | .38 | .38 | .38 | .14 | .14 | .14 | 0.00 | 0.00 | 0.00 |
| Institution | 7720 | 44275 | .51 | 51 | .51 | .21 | .21 | .21 | 0.00 | 0.00 | 0.00 |
| Industry | 7670 | 44245 | | | | 1.00 | 1.00 | 1.00 | | | |
| TOTAL | | | | | 8:19 | | | 21.47 | | | .71 |

AIR POLLUTANT EMISSIONS FOR SPRINGFIELD STUDY AREA BY GRID (TO

| Grid | Hor. Coor. (100m) | Vert. Coor. (100m) | Area (sq. mi) | $SO_x$ AVG. | PART. AVG. |
|---|---|---|---|---|---|
| 26 | 7800 | 44000 | 154.40 | 0.01 | 0.02 |
| 32 | 7550 | 44150 | 38.60 | 0.08 | 0.04 |
| 33 | 7650 | 44150 | 38.60 | 0.12 | 0.05 |
| 37 | 7500 | 44300 | 154.40 | 0.14 | 0.07 |
| 42 | 7750 | 44150 | 38.60 | 0.06 | 0.13 |
| 43 | 7850 | 44150 | 38.60 | 0.06 | 0.04 |
| 44 | 7650 | 44250 | 38.60 | 6.49 | 14.91 |
| 45 | 7750 | 44250 | 38.60 | 5.20 | 14.25 |
| 46 | 7850 | 44250 | 38.60 | 0.07 | 0.04 |
| 47 | 7650 | 44350 | 38.60 | 0.05 | 0.04 |
| 48 | 7750 | 44350 | 38.60 | 0.07 | 0.04 |
| 49 | 7850 | 44350 | 38.60 | 0.03 | 0.04 |

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SPRINGFIELD AIR POLLUTANT EMISSION INVENTORY (TONS/DAY)

| AVG | SUM | PART. WIN | AVG | SUM | CO WIN | AVG | SUM | HC WIN | AVG | SUM | $NO_x$ WIN | AVG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.13 | 0.13 | 0.13 | | | | | | | | | |
| | 0.16 | 0.16 | 0.16 | | | | | | | | | |
| 6.43 | 13.87 | 13.87 | 13.87 | 0.60 | 0.60 | 0.60 | 0.20 | 0.20 | 0.20 | 2.42 | 2.42 | 2.42 |
| 0.35 | 0.00 | 11.48 | 5.74 | 0.00 | .22 | .11 | 0.00 | 0.00 | 0.00 | 0.00 | .10 | .05 |
| .52 | .22 | .22 | .22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 | 0.10 |
| .38 | .14 | .14 | .14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.07 | 0.07 |
| .51 | .21 | .21 | .21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 |
| | 1.00 | 1.00 | 1.00 | | | | | | | | | |
| 8:19 | | | 21.47 | | | .71 | | | .20 | | | 2.65 |

EMISSIONS FOR SPRINGFIELD STUDY AREA BY GRID (TONS/DAY)

| Area (sq. mi) | $SO_x$ AVG. | PART. AVG. | CO AVG. | HC AVG. | $NO_x$ AVG. |
|---|---|---|---|---|---|
| 154.40 | 0.01 | 0.02 | 0.54 | 0.07 | 0.03 |
| 38.60 | 0.08 | 0.04 | 2.78 | 0.41 | 0.18 |
| 38.60 | 0.12 | 0.05 | 4.57 | 0.69 | 0.30 |
| 154.40 | 0.14 | 0.07 | 5.09 | 0.76 | 0.34 |
| 38.60 | 0.06 | 0.13 | 2.42 | 0.36 | 0.16 |
| 38.60 | 0.06 | 0.04 | 1.96 | 0.29 | 0.13 |
| 38.60 | 6.49 | 14.91 | 2.64 | 0.50 | 2.55 |
| 38.60 | 5.20 | 14.25 | 79.04 | 11.94 | 6.80 |
| 38.60 | 0.07 | 0.04 | 1.97 | 0.29 | 0.13 |
| 38.60 | 0.05 | 0.04 | 1.53 | 0.22 | 0.09 |
| 38.60 | 0.07 | 0.04 | 2.42 | 0.36 | 0.14 |
| 38.60 | 0.03 | 0.04 | 1.34 | 0.19 | 0.07 |

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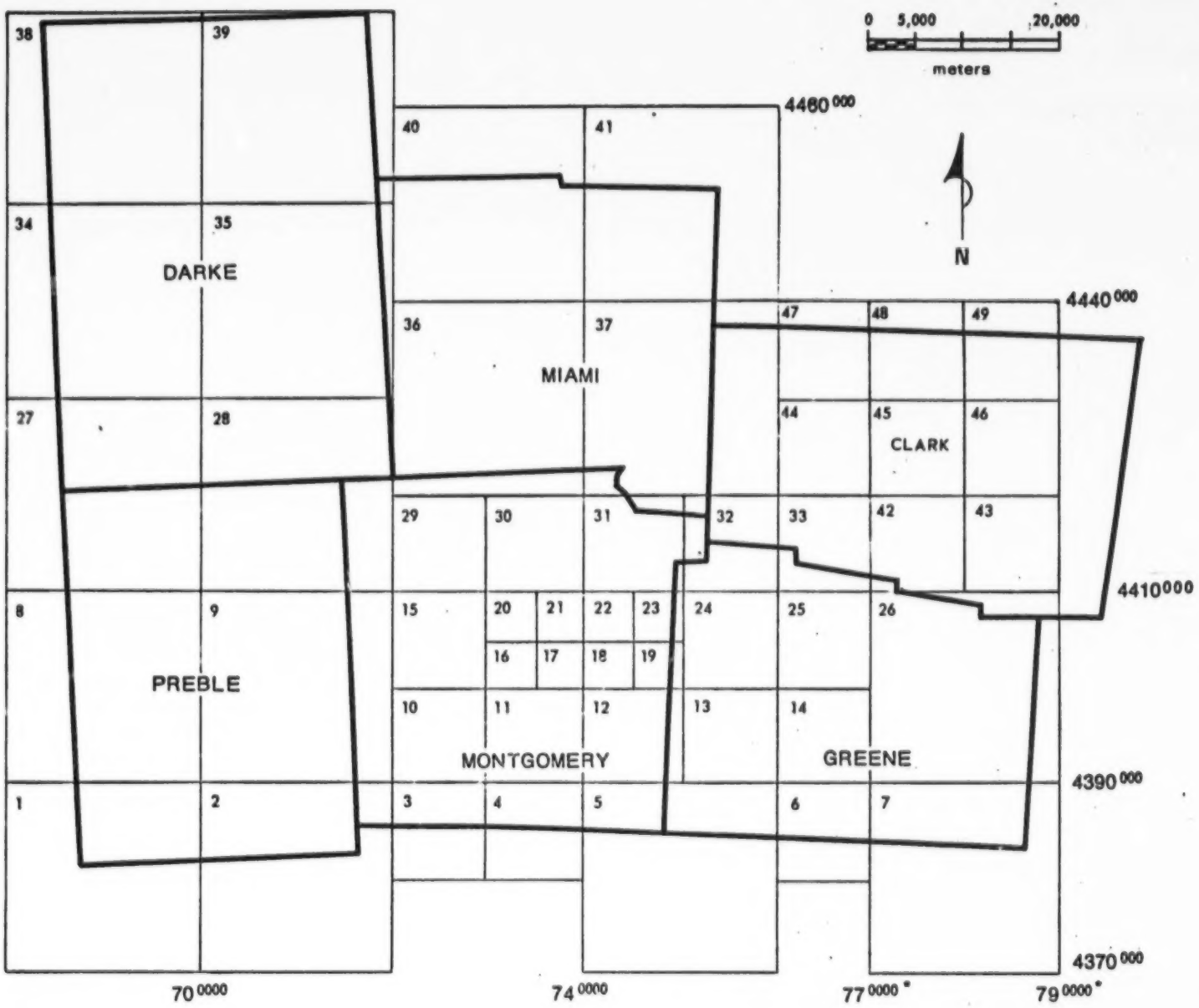


Figure 2. Dayton and Springfield grid coordinate system